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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,482	03/31/2004	Toshiharu Furukawa	ROC920030399US1	6082
30206 7590 02/01/2008 IBM CORPORATION ROCHESTER IP LAW DEPT. 917 3605 HIGHWAY 52 NORTH ROCHESTER, MN 55901-7829			EXAMINER GOODWIN, DAVID J	
			ART UNIT 2818	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

1. The reply brief filed 12/14/2007 has been entered and considered. The application has been forwarded to the Board of Patent Appeals and Interferences for decision on the appeal.

1. The appellant argues that the Wasshuber reference teaches that the lattice structure the silicon is retained and therefore no silicon oxide is formed in the buried implantation layer. Page 4 of appellant reply brief. The argument is repeated on pages 5 and 6

2. The appellant is incorrect. As the appellant notes Wasshuber teaches "due to the impact of such implantation on the lattice structure of the silicon in the first regions 12, volumetric expansion or contraction can be achieved by controlling the dosage of the implantation to achieve any desired concentration of implanted species within the silicon." This clearly does not say that the silicon lattice is retained. Further, the reaction of silicon with implanted oxygen will have a definite and disruptive impact on the silicon lattice structure.

3. The appellant argues that the implantation of a low concentration of oxygen by implantation forms a solid solution. Page 4 of appellant reply brief, and repeated on pages 6 and 7.

4. The appellant is again mischaracterizing Wasshuber. Wasshuber does not teach a "low concentration" of oxygen or a solid solution. Wasshuber teaches the implantation of sufficient oxygen to cause a volumetric expansion. As noted by the appellant, page

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5 of reply brief, the solubility limit of oxygen in silicon is one oxygen per 5000 silicon. Such a low concentration would clearly not result in the volumetric expansion taught by Wasshuber. Therefore, there is no reason to believe Wasshuber intended a low implantation of oxygen and every reason to understand that Wasshuber intended a higher concentration of oxygen.

5. The appellant argues that a solid solution is not a compound and that exceeding the solubility limit will cause precipitates of silicon and oxygen randomly distributed in the silicon.

6. Wasshuber does not teach that a solid solution is formed. Further Wasshuber teaches against the random distribution of silicon oxide precipitates in the silicon substrate. The implantation of oxygen was deliberately controlled forming buried layer 12, which as the appellant notes is formed by the precipitation of silicon and oxygen which forms silicon oxide.

7. The appellant argues that the formation of a buried oxide layer requires a high dose of oxygen followed by a thermal anneal. Page 6 of reply

8. Despite the appellant's assertions, Wasshuber does not teach a low implantation dose of oxygen but rather a dose high enough to cause the implanted layer to expand. Further, due to thermodynamics of the chemical reaction between silicon and oxygen, silicon oxide will form without a high temperature anneal driving the reaction. Hence, the appellant's review of the process is technically deficient.

9. The appellant argues that claim 1 of the application recite "a thickened region" which is absent from the Wasshuber reference. Page 8 of the reply.

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10. The appellant incorrectly characterizes this limitation as unambiguous. As the appellant notes this limitation may be construed as meaning that a portion within the thickened region is thicker than a portion outside the thickened region. However, this limitation would also and more probably be construed as meaning that the portion that is the thickened region is thicker than the portion was at some point in the past, and as such this is a process limitation that does not structurally limit the claim. The appellant's position that the phrase does limit the claim would require that the claim be rejected under 112 2nd ambiguity.

11. The appellant argues that Wasshuber teaches a buried layer (512) as having a uniform thickness. Pages 9, 10, and 11 of reply.

12. The appellant purposefully disregards the clear teaching of Wasshuber figure 19 element 512. Element 512 shows a that the central portion thicker than the end regions. One of ordinary skill in the art would reasonably infer that the central portion of layer 512 is thicker than the end portions of 512. One of ordinary skill in the art would understand the physical basis of this teaching as due to the volumetric expansion of the implanted region 512 being restrained by non-implanted regions adjacent the implanted region 512. Assuming that the layer 512 is of uniform thickness goes against not only the clear teaching of Wasshuber but also the widely understood laws of physics and geometry.

13. The appellant argues that Yeo does not teach that the underlying layer transfers strain to the overlying layer. Page 10 of reply.

14. The appellant mischaracterizes the laws of physics. A stable strain requires that the strained layer exert a force against an equal and counterbalancing force. Without such a counterbalancing force the strain will relax and vanish. In the Yeo reference the counter balancing force is provided by the isolating layer (54). This property depends on physical and mechanical forces that would be well known and recognized by one of ordinary skill in the art and therefore extensive and explicit teaching is unnecessary.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID GOODWIN whose telephone number is (571)272-8451. The examiner can normally be reached on Monday through Friday, 9:00am through 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on (571)272-1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJG

STEVEN LOKE
SUPERVISORY PATENT EXAMINER

A handwritten signature in black ink, appearing to read "Steven Loke", is written over the printed name and title.